Generally, this application is amended to contain independent Claims 11, 12, 13, 16, 19 and 22. It is believed that all of these independent claims are in condition for allowance. As for dependent Claim 10, it is noted with appreciation that this claim defines allowable subject matter, but Applicant defers rewriting this claim in independent form pending further consideration of this application.

Generally, Applicant's invention relates to an operating unit for automatically slowing a vehicle upon detection of a danger state along the roadway. This operating system is provided in a vehicle which is under the control of the vehicle operator, but the operating unit automatically brakes the vehicle when a danger state is encountered.

The primary rejection of Claims 3-5 and 11-15 is based upon the combination of James and Tognazzini. As discussed herein, all of the pending claims are believed patentably distinguishable over this combination of references. Dependent Claims 8 and 9 also are rejected over James and Tognazzini, as well as Cooper.

First, with respect to Claim 11, Claim 11 defines an operating system for a vehicle, which vehicle has an automatic braking device that includes a manual actuator where braking is produced via operation of the manual actuator by a vehicle operator. The operating unit further includes detection means and a transmitter adjacent to a road which transmits a transmitter signal to the vehicle which transmitter signal is based upon detection of a danger state along the road. A receiver is provided in the vehicle which receives the transmitter signal and outputs a control signal based on the transmitter signal. The automatic braking device receives the control signal and operates an antilock control device. A reference value corresponding to a target traveling speed is set inside the vehicle wherein the automatic braking device operates with reference to said reference value to reduce an actual traveling speed of the vehicle to the target traveling

speed. Neither James nor Tognazzini, when considered alone or in combination, disclose this claimed arrangement.

Generally, James relate to a complex automated highway system only used to operate "dumb cars". The dumb cars are not operated by vehicle occupants, but instead are operated and controlled completely by the transmitters and receivers communicating with on-board vehicle actuators. The vehicle occupants do not control steering, acceleration or braking of the vehicle, which parameters instead are controlled by the roadside transmitters, receiver and control systems.

Tognazzini relates to a warning system for conventional vehicles which are driven by a vehicle occupant. The control system of Tognazzini is constructed and functions to detect the presence of a fog bank affecting visibility, which impairs the driving abilities of the vehicle occupant.

Applicant respectfully submits that there is no motivation to combine these references. In particular, the dumb cars of James are controlled completely by the automated highway system and interact with the vehicle occupant to drive the vehicle. As such, the automated highway system of James can disregard whether there are visibility problems for the vehicle occupant since the vehicle occupant is not driving the vehicle. The automated highway system of James automatically maintains the traveling interval of vehicles and since this traveling interval is maintained automatically, all of the vehicles can proceed with this traveling interval even if fog occurs and impairs visibility. In this regard, the longitudinal position of the vehicle is determined by the longitudinal receivers 20 while the lateral position us determined by the lateral receivers 30 and these receivers function independently of and are not affected by conditions of visibility.

In fact, James is not believed to disclose, teach or suggest detecting danger conditions along the roadway. At best, James is only believed to monitor general environmental conditions. No detectors are disclosed in James alongside the

roadway, which therefore indicates that James does not need to monitor the specific conditions along the roadway.

Tognazzini, however, specifically relates to a system where impaired visibility is a problem as occurs with manually operated vehicles. Further, this system provides roadside indicators for manual control of the vehicle. Since James does not relate to manually controlled vehicles and in fact, is fully functional even in the presence of impaired visibility, there is no motivation or suggestion to modify James to include the fog detectors of Tognazzini. In fact, it is believed that the use of dumb cars in the James system teaches away from providing features of the Tognazzini system which is designed for manually controlled vehicles.

Even if combined, the systems of James and Tognazzini structurally differ from Applicant's claimed invention and furthermore, it is not believed that these references disclose, teach or suggest modifying the systems of James and Tognazzini to create Applicant's claimed invention.

Further, the James system monitors the location and speed of the vehicles and adjusts the location and speed of the vehicles across the entire system. The Tognazzini system, however, takes into account the variations in driving created by manually driven vehicles and thus, has a traffic sensor for detecting traffic speed and separation as a whole, which then reacts to this arrangement only in the presence of fog. This system does not envision providing control to vehicles outside of the fog condition which completely differs from the arrangement of James. As such, the distinct differences in the systems of Tognazzini and James would also teach away from combining these references.

More particularly, Claim 11 defines the operating unit as being in a vehicle, which vehicle has an automatic braking device that includes a manual actuator where braking is produced in wheel brakes by operation of the manual actuator via vehicle operator. When a danger state of the traveling road is detected by the detection means provided adjacent to

the road, the transmitter signal is supplied to the vehicle, thereby producing the control signal so that when the actual traveling speed exceeds the target traveling speed based on reception of the control signal, the automatic braking device operates to automatically reduce the traveling speed to the target traveling speed. Thus, the system of Claim 11 includes a vehicle with a manual actuator which provides braking by a vehicle operator while still providing for automatic reductions in speed based on the detection of a danger state.

Therefore, even if James was modified to include roadside sensors as suggested in the Office Action, this arrangement still distinctly differs since the vehicles of James are dumb cars that are controlled solely by the automated highway system. Manually operated vehicles would not be provided in James since the very purpose of James is to eliminate manual control of the vehicles. The claimed invention provides the distinct flexibility associated with a manually operated vehicle with manual braking being provided therein, while also providing for automatic operation of the braking device during detection of a danger state to avoid the danger state. Therefore, even if James was modified to include roadside sensors, the arrangement of Claim 11 still structurally and functionally differs from the system of James.

Additionally, Claim 11 defines that a reference value corresponding to a target traveling speed is set inside the vehicle. Such a feature is not believed to be disclosed, taught or suggested by James or Tognazzini whether considered alone or in combination.

In the Office Action, it is alleged that column 7, lines 45-47 of James discloses such a feature in James. However, the disclosure cited in the Office Action merely discloses that a command input buffer acts as an elastic memory allowing the vehicle command processor to operate on the commands one at a time. The processed commands are then routed to an appropriate actuator on the vehicle. This disclosure is not believe to disclose, teach or suggest having a reference value

corresponding to a target traveling speed set inside the vehicle.

Rather, it is believed that the command input buffer is provided as an elastic memory to merely allow the vehicle command processor to operate when multiple commands are received at the same time. The command input buffer outputs the received commands to the vehicle command processor as disclosed in column 7, lines 12-14. Therefore, the braking command received from the roadside processing system is supplied to the vehicle command processor 64 through the buffer. James therefore discloses that the actuators relating to braking operate based on the specific command received from the signals sent to the transponder 52 on the vehicle.

With this arrangement, control signals are provided by the roadside processing means 70 via the transmitters which signals then operate the actuators. It is the local roadside processor 70 that calculates the vehicle position, tracks the vehicle and determines navigational adjustments as disclosed in column 8, lines 52-58 of James. With this arrangement, the brake actuator is controlled directly by the specific commands supplied from the roadside processor 70. These commands are believed to be varied by continual tracking of the longitudinal direction of the vehicle by the roadside receivers 20, which thereby is considered when determining the necessity of further operation of the brake. All calculations and determinations of whether braking should occur or not occur is determined on the roadside and is not affected or dictated by any values stored on-board the vehicle.

Therefore, James does not disclose, teach or suggest setting a reference value corresponding to a target traveling speed on the vehicle, as defined in Claim 11. Rather, the system of James is only believed to send commands to the vehicle to indicate whether to brake or not wherein the extent of braking and the duration of braking is continually monitored and determined on the roadside. This arrangement is therefore structurally and functionally distinctly different

from Applicant's claimed arrangement. Tognazzini does not cure the deficiencies of James and accordingly, Claim 11 is believed to be patentably distinguishable from the applied prior art. For this reason alone, dependent Claims 3-5 are also believed in condition for allowance.

Still further, Claim 3 defines that reference value setting means are provided on the vehicle by which the reference value is set. As discussed above, James does not disclose, teach or suggest providing on-board storage of a reference value. Rather, James only discloses providing real-time braking, acceleration and steering commands, the nature of which distinctly differs from the arrangement of Claim 11.

As for independent Claim 12, this claim also defines that the vehicle has a manual actuator which produces braking by operation thereof by a vehicle operator. Further, Claim 12 defines that a reference value corresponding to a target traveling speed is set inside the vehicle. For the reasons discussed above relative to Claim 11, these features are not disclosed, taught or suggested by the prior art of record. Further, there is no motivation to combine James and Tognazzini as further discussed above relative to Claim 11. Accordingly, Claim 12 and dependent Claims 8-10 are believed in condition for allowance.

Claim 13 is amended for clarity, but is believed to be patentably distinguishable from James and Tognazzini. Claim 13 defines that the vehicle includes a manual actuator within a compartment of the vehicle that is operable by an operator of the vehicle. Generally, as discussed above relative to Claim 11, James only discloses use of dumb cars, which is believed to specifically teach away from providing manual actuators for braking within the vehicle. In fact, the system of James would not be provided with manual actuators since it defeats the very purpose of the invention of James.

Further, Claim 13 has a target speed setting device for setting a target traveling speed for the vehicle such that actuation of the automatic braking device based on receipt of

the control signal produces the braking force which reduces the actual traveling speed to the target traveling speed automatically and independently of the manual actuator. As discussed above relative to Claim 11, neither James nor Tognazzini are believed to disclose, teach or suggest this arrangement. As such, Claims 13-15 are believed in condition for allowance.

As for added Claims 16 and 19, these claims also are believed allowable. Both of these claims define the operating system of the invention as including a manual actuator for braking and also having a reference value set in the vehicle. As discussed above relative to Claims 11 and 12, these features are not believed to be disclosed, taught or suggested by the prior art of record and accordingly, added Claims 16-21 are believed in condition for allowance. Additionally, Claims 17 and 20 define subject matter similar to allowable Claim 10.

Claims 18 and 21 define the transmitter signal as indicating the presence of the danger state. In James and Tognazzini, these references do not disclose a transmitter signal being sent to the vehicle which is indicative of the presence of a danger state wherein an automatic braking device automatically reduces the actual traveling speed of the vehicle based on the presence of the danger state. Claims 18 and 21 thereby define additional features of the invention which are not disclosed, taught or suggested by the prior art of record.

As to independent Claim 22, this claim defines an operating unit for a vehicle which includes a receiver which receives a transmitter signal outputted by a transmitter and outputs a control signal based upon reception of the transmitter signal. An automatic braking device is operated based on receipt of the control signal to generate a braking force. A reference value corresponding to a target traveling speed is set inside the vehicle and the automatic braking device operates with reference to the reference value to automatically reduce the actual traveling speed to the target

traveling speed. When the actual traveling speed is less than the target traveling speed, the automatic braking device does not operate. As discussed above relative to James and Tognazzini, these references do not disclose, teach or suggest that a reference value is set inside a vehicle which corresponds to a target traveling speed. Claim 22 is believed patentably distinguishable from the prior art of record and accordingly, dependent Claims 23 and 24 are also believed allowable. Claim 23 also corresponds to allowable Claim 10. Claim 24 defines the transmitter signal as indicating the presence of a danger state adjacent the roadway wherein the automatic braking device automatically reduces the traveling speed based on the presence of the danger state. These features also are believed to further distinguish the claimed invention from the prior art of record.

In view of the foregoing, all of Claims 3-5, 8-10 and 11-24 are believed allowable. Further and favorable consideration of this application is respectfully solicited.

Respectfully submitted,

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Encl: Marked-Up Claims 3 and 11-13
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MARKED-UP CLAIMS 3 and 11-13

3. (Thrice Amended) The operating unit according to Claim 11, further comprising reference value setting means provided in the vehicle ~~for setting a~~by which said reference value corresponding to said target traveling speed is set, and wherein the automatic braking device is operated according to the reference value set by the reference value setting means based on the control signal.

11. (Amended) ~~An~~In an operating unit for a vehicle traveling on a road which said vehicle has an automatic braking device that includes a manual actuator where braking is produced in wheel brakes by operation of said manual actuator by a vehicle operator, said operating unit comprising:

at least one detection means provided adjacent to the road for detecting a danger state and outputting a detection signal ~~upon~~based on detection of said danger state;

a transmitter provided ~~on~~adjacent to the road which receives said detection signal and transmits a transmitter signal formed of an electromagnetic wave based on the detection signal;

a receiver provided ~~in~~on ~~a~~said vehicle which receives said transmitter signal and outputs a control signal ~~upon~~based on reception of the transmitter signal outputted by the transmitter;

said automatic braking device receiving said control signal and ~~being connected to~~operating an antilock control device of said vehicle, said automatic braking device being operated based on receipt of the control signal in order to operate an automatic brake wherein a braking fluid is obtained by driving a pump of said

automatic braking device to supply said braking fluid to wheel brakes provided in at least a pair of right and left wheels to produce a braking force, so that said antilock control device is operable during the operation of the automatic braking device; and

a reference value corresponding to a target traveling speed being set inside the vehicle based on said control signal wherein when an actual traveling speed of the vehicle exceeds ~~a~~said target traveling speed for the vehicle after the control signal is received, the automatic braking device operates with reference to said reference value to automatically reduce the actual traveling speed to the target traveling speed by the operation of the automatic braking device.

12. (Amended) ~~A~~In a vehicle operating unit for a vehicle traveling on a road which said vehicle has an automatic braking device that includes a manual actuator where braking is produced in wheel brakes by operation of said manual actuator by a vehicle operator, said operating unit comprising:

at least one detection means provided adjacent to the road for detecting a danger state and outputting a detection signal ~~upon~~based on detection of said danger state;

a transmitter provided ~~on~~adjacent to the road which receives said ~~transmitted~~detection signal and transmits a transmitter signal formed of an electromagnetic wave based on the detection signal;

a receiver provided ~~in~~on ~~a~~said vehicle which receives said transmitter signal and outputs a control signal ~~upon~~based on reception of the transmitter signal outputted by the transmitter;

said automatic braking device receiving said control signal and ~~being connected to~~operating an antilock

control device of said vehicle, said automatic braking device being operated based on receipt of the control signal in order to operate an automatic brake wherein a braking fluid is obtained by driving a pump of said automatic braking device to supply said braking fluid to wheel brakes provided in at least a pair of right and left wheels to produce a braking force~~, so that an antilock control device is operable during the operation of the automatic braking device~~;

a reference value corresponding to a target traveling speed being set inside the vehicle based on said control signal wherein when an actual traveling speed of the vehicle exceeds ~~a~~said target traveling speed for the vehicle after the control signal is received, the automatic braking device operates with reference to said reference value to automatically reduce the actual traveling speed to the target traveling speed by the operation of the automatic braking device; and

an alarm unit being provided which generates an alarm to the inside of the vehicle based on the control signal outputted by the receiver based upon receipt of said transmitter signal transmitted from said transmitter.

13. (Amended) In a vehicle adapted to travel on a road, said vehicle comprising ~~an antilock~~a brake system including an automatic braking device and individual wheel brakes which are provided in wheels of the vehicle, said vehicle including a manual actuator within a compartment of the vehicle which is connected to said ~~antilock~~ brake system and is operable by an operator of the vehicle to effect manual operation of the ~~antilock~~ brake system, the improvement comprising an operating unit for said vehicle to automatically reduce an actual traveling speed of said vehicle during emergency

conditions, said operating unit comprising at least one detection means provided adjacent to a road for detecting a danger state within said road, said detection means outputting a detection signal ~~upon~~based on detection of said danger state, a transmitter provided on said road which receives said detection signal and transmits a transmitter signal along said road to vehicles traveling thereon, a receiver being provided ~~in~~within said vehicle which receives said transmitter signal and outputs a control signal ~~upon~~based on reception of said transmitter signal, an automatic braking device being provided on said vehicle to effect actuation of said wheel brakes independent of said manual actuator within said vehicle, said automatic braking device being connected to said receiver to receive said control signal and ~~upon~~based on receipt of said control signal to effect actuation of at least one of said wheel brakes to produce a braking force in said wheels depending upon the presence ~~or absence~~ of said danger state, said automatic braking device including a target speed setting device ~~for storing~~in which is set a target traveling speed for said vehicle such that actuation of said ~~antilock brake system upon~~automatic braking device based on receipt of said control signal produces said braking force which reduces said actual traveling speed to said target traveling speed automatically ~~upon~~based on receipt of said control signal and independently of said manual actuator.